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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/647,794	08/25/2003	Yukihisa Takeuchi	789 115	2005

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EXAMINER	
RIELLEY, ELIZABETH A	
ART UNIT	**PAPER NUMBER**
2879	

DATE MAILED: 08/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/647,794	TAKEUCHI ET AL.	
	Examiner	Art Unit	
	Elizabeth A. Rielley	2879	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 February 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *25 August 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *all*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

Amendment filed 23 February 2005 has been entered and considered by the Examiner. Currently, claims 1-25 are pending in the instant application.

Priority

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Specification

The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Objections

Claim 15 is objected to because of the following informalities: page 50 line 3 contains the phrase "according to *claims* 1". The word "claims" should be changed to "claim". Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 5 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite in that it fails to point out what is included or excluded by the claim language. This claim is an omnibus type claim.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-4, 8-17, 19-20, and 22-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kano et al (US 6198225) in view of Okamoto et al (US 5280221).

In regard to claim 1, Kano et al ('225) teach a light emission device (figure 10) comprising: a substance (66) disposed in a vacuum atmosphere (column 1 lines 39-47) and serving as an emitter (column 21 lines 31-48); and a first electrode (64), a second electrode (22), and a fluorescent body (72) which are disposed in contact with said substance serving as the emitter (see figure 10); wherein when a drive voltage is applied between said first electrode and said second electrode (column 11 lines 16-22), the polarization of at least a portion of said substance serving as the emitter is reversed or changed

(column 22 lines 4-40) and said electrons impinge upon said fluorescent body to emit light (column 21 lines 31-48; column 22 lines 4-40). Kano ('225) is silent regarding the limitations that the reversal of the emitting substance causes emitted electrons from at least a portion of said first electrode, and the emitting substance is made from a dielectric material. Okamoto et al ('221) discloses a light emitting device (figure 2a) comprising an emitting substance is made from a dielectric material (4; column 3 lines 15-20) and the reversal of the emitting substance causes emitted electrons from at least a portion of said first electrode (abstract) in order to provide a more stable operation of the light emitting device thus giving the device a longer life span (column 1 lines 52-60). Hence it would have been obvious at the time of the invention to one of ordinary skill in the art to combine the light-emitting device of Kano et al ('225) with the electron emitting substance of Okamoto et al ('221). Motivation to combine would be in improve the life span of the light-emitting device.

In regard to claim 2, Kano et al ('225) teach the first electrode (64) and the fluorescent body (72) are disposed on a first surface of said substance serving as the emitter (66), and said second electrode (22) is disposed on a second surface of said substance serving as the emitter (see figure 10).

In regard to claim 3, Kano et al ('225) teach the first electrode (64) and the fluorescent body (72) have an outer peripheral edge (not numbered) and an inner peripheral edge (not numbered), respectively, which face each other (see figure 10; the two are side by side so they may be said to face each other).

In regard to claim 4, Kano et al ('225) teach the fluorescent body (72) and said first electrode (64) have an outer peripheral edge (not numbered) and an inner peripheral edge (not numbered), respectively, which face each other (see figure 10; the two are side by side so they may be said to face each other).

In regard to claim 8, Kano et al ('225) teach a first electrode (64; figure 10; left side of 72) and a second electrode (64; figure 10; right side of 72) are disposed in contact with a principal surface of said substance serving as the emitter (66), with a slit defined between said first electrode and said second electrode (not numbered), said fluorescent body being disposed in at least said slit (72; see figure 10).

In regard to claim 9, Kano et al ('225) teach all the limitations set forth, as described above, except that the substance serving as the emitter has a portion exposed at least between said first electrode and said fluorescent body. Okamoto et al ('221) teach that the substance serving as the emitter (4) has a portion exposed at least between said first electrode (5) and said fluorescent body (8) see figure 2a) in order to provide a more stable operation of the light emitting device thus giving the device a longer life span (column 1 lines 52-60). Hence it would have been obvious at the time of the invention to one of ordinary skill in the art to combine the light-emitting device of Kano et al ('225) with the electron emitting substance of Okamoto et al ('221). Motivation to combine would be in improve the life span of the light-emitting device.

In regard to claim 10, Kano et al ('225) teach the first electrode (64) and said fluorescent body (72) have an outer peripheral edge and an inner peripheral edge, respectively, which face each other (see figure 10; the two are side by side so they may be said to face each other).

In regard to claim 11, Kano et al ('225) teach the fluorescent body (74) and said second electrode (64) have an outer peripheral edge and an inner peripheral edge, respectively, which face each other (see figure 10; the two are side by side so they may be said to face each other).

In regard to claim 12, Kano et al ('225) teach the second electrode (64) and said fluorescent body (74) have an outer peripheral edge and an inner peripheral edge, respectively (not numbered), which face each other (see figure 10; the two are side by side so they may be said to face each other).

In regard to claim 13, Kano et al ('225) teach the fluorescent body (74) and said first electrode (64) have an outer peripheral edge and an inner peripheral edge, respectively (not numbered), which face each other see figure 10; the two are side by side so they may be said to face each other).

In regard to claim 14, Kano et al ('225) teach the fluorescent body (74) is disposed in covering relation to said second electrode (64; see figure 10).

In regard to claims 15-16, Kano et al ('225) disclose a step includes a preparatory period in which a first voltage making the potential of said first electrode higher than the potential of said second electrode is applied between said first electrode and said second electrode to polarize said substance serving as the emitter (66; column 4 lines 14-36), and an electron emission period in which a second voltage making the potential of said first electrode lower than the potential of said second electrode is applied between said first electrode and said second electrode to reverse or change the polarization of said substance serving as the emitter to emit electrons therefrom, and said step is repeated (column 11 lines 16-22 state the use of alternating current for the light emitting device, which would naturally cause this polarization of the emitting substance). The use of the alternating current would naturally repeat the steps involved, as described in claim 16. Kano et al ('225) also teaches the use of switches (82; figure 11; column 21 lines 50-65) to selectively perform the cycles (column 21 lines 50-65).

In regard to claims 17 and 20, Kano et al ('225) are silent regarding the limitation of electrons are emitted from a portion of said first electrode in the vicinity of a triple point made up of said first electrode, said substance serving as the emitter, and a vacuum atmosphere during said electron emission period in said step, and the emitted electrons impinge upon said fluorescent body to emit light therefrom, and wherein electrons are emitted from a portion of said second electrode in the vicinity of a triple point made up of said second electrode, said substance serving as the emitter, and a vacuum atmosphere during said electron emission period in said step of said second cycle, and the emitted electrons impinge upon said fluorescent body to emit light therefrom. Okamoto et al ('221) teach that electrons are emitted from a portion of said first electrode (5; abstract; column 3 lines 15-38; figure 2a) in the vicinity of a triple point (not numbered) made up of said first electrode (5; first on the top), said substance serving as the emitter (4), and a vacuum atmosphere (not numbered, in-between 5 and 10; column 4 lines 38-44; see figure 2a) during said electron emission period in said step (abstract), and the emitted electrons impinge upon said fluorescent body (8; column 3 lines 51-66) to emit light therefrom (see figure 2a).Okamoto et al ('221) also teach that electrons are emitted from a portion of said second electrode (5; second from the top) in the vicinity of a triple point made up of said second electrode, said substance serving as the emitter (4), and a vacuum atmosphere during said electron emission period in said step of said second cycle, and the emitted electrons impinge upon said fluorescent body to emit light therefrom in order to provide a more stable operation of the light emitting device thus giving the device a longer life span (column 1 lines 52-60). Hence it would have been obvious at the time of the invention to one of ordinary skill in the art to combine the light-emitting device of Kano et al ('225) with the triple point of Okamoto et al ('221). Motivation to combine would be in improve the life span of the light-emitting device.

In regard to claims 19 and 22, Kano et al ('225) are silent regarding the limitations that electrons are emitted from a portion of said first electrode in the vicinity of a triple point made up of said first

electrode, said substance serving as the emitter, and a vacuum atmosphere during said electron emission period in said step, the emitted electrons impinge upon said substance serving as the emitter to emit secondary electrons therefrom, and said secondary electrons impinge upon said fluorescent body to emit light therefrom, and electrons are emitted from a portion of said second electrode in the vicinity of a triple point made up of said second electrode, said substance serving as the emitter, and a vacuum atmosphere during said electron emission period in said step of said second cycle, the emitted electrons impinge upon said substance serving as the emitter to emit secondary electrons therefrom, and said secondary electrons impinge upon said fluorescent body to emit light therefrom.. Okamoto et al ('221) teach that electrons are emitted from a portion of said first electrode (5, first on the top; abstract; column 3 lines 15-38; figure 2a) in the vicinity of a triple point (not numbered) made up of said first electrode (5), said substance serving as the emitter (4), and a vacuum atmosphere (not numbered, in-between 5 and 10; column 4 lines 38-44; see figure 2a) during said electron emission period in said step (abstract); and electrons are emitted from a portion of said second electrode (5 second from the top) in the vicinity of a triple point (not numbered) made up of said second electrode (5), said substance serving as the emitter (4), and a vacuum atmosphere during said electron emission period in said step of said second cycle (see abstract). Although Okamoto et al ('221) do not specifically teach that the emitted electrons impinge upon said substance serving as the emitter to emit secondary electrons therefrom, and said secondary electrons impinge upon said fluorescent body to emit light therefrom, since Okamoto et al teach all the structural limitations of the final product, and due to the fact that one skilled in the art will be aware of that emitted electrons would naturally impinge upon said substance serving as the emitter which would naturally cause secondary electrons therefrom, and these secondary electrons would then impinge upon said fluorescent body to emit light therefrom. Hence it would have been obvious at the time of the invention to one of ordinary skill in the art to combine the light-emitting device of Kano et al ('225) with the structure of the light emitting device as

taught by Okamoto et al ('221). Motivation to combine would be in improve the life span of the light-emitting device.

In regard to claims 23-24, Kano et al ('225) teach the vacuum atmosphere has a vacuum level of at most 2000 Pa and the vacuum atmosphere has a vacuum level of at most 10^{-3} Pa (column 20 lines 17-28).

Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kano et al (US 6198225) in view of Okamoto et al (US 5280221) as applied to claim 1 above, and further in view of Oohata et al (US 5343052).

In regard to claims 5 and 6, Kano/Okamoto teach all the limitations set forth, as described above, except the first electrode and said second electrode have respective projected shapes as viewed in plan, and the projected shape of said second electrode has a protruding portion which protrudes from a peripheral edge of the projected shape of said first electrode, and the projected shape of said first electrode and the projected shape of said second electrode are similar to each other. Oohata et al ('052) teach a first electrode (2; figure 1) and a second electrode (3; column 4 lines 46-65) have respective projected shapes, and the projected shape of said second electrode (3) has a protruding portion (3a) which protrudes from a peripheral edge of the projected shape of said first electrode (2), and the projected shape of said first electrode (2) and the projected shape of said second electrode (3) are similar to each other (see figure 1) in order to reduce the risk of latch-up (column 8 lines 44-48). Hence, it would have been obvious at the time of the invention to one of ordinary skill in the art to combine the light-emitting device of Kano/Okamoto with the electrode shape of Oohata et al. Motivation to combine would be to reduce the risk of latch-up.

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kano et al (US 6198225) in view of Okamoto et al (US 5280221) in view of Oohata et al (US 5343052), and in further view of Matsuzaki et al (US 5631524).

In regard to claim 7, Kano/Okamoto/Oohata teach all the limitations set forth, as described above, except the protruding portion has a maximum length ranging from 1 μm to 500 μm. Matsuzaki et al ('524) teach a protruding portion of an electrode (13; figure 3a) has a maximum length ranging from 1 μm to 500 μm (column 8 lines 45-57) in order to more clearly concentrate the flow of electrons. Hence, it would have been obvious at the time of the invention to one of ordinary skill in the art to combine the light-emitting device of Kano/Okamoto/Oohata with the electrode of Matsuzaki. Motivation to combine would be to more clearly concentrate the flow of electrons.

Claims 18 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kano et al (US 6198225) in view of Okamoto et al (US 5280221) as applied to claim 1 above, and further in view of Doll (US 20040046490).

In regard to claims 18 and 21, Kano/Okamoto teach all the limitations set forth as described above, except that the emitted electrons are reflected by a surface of the substance serving as the emitter and impinge upon said fluorescent body to emit light there of. Doll ('490) discloses a reflection layer (6) made of emitting material (abstract) in order to improve the discharge behavior of the lamp (abstract). Hence, it would have been obvious at the time of the invention to one of ordinary skill in the art to combine the light emitting device of Kano/Okamoto with the emitting material of Doll ('490). Motivation to combine would be to improve the discharge behavior of the lamp.

Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kano et al (US 6198225) in view of Okamoto et al (US 5280221) as applied to claim 1 above, and further in view of Files et al (US 5657054).

In regard to claim 25, Kano/Okamoto et al teach all the limitations set forth, as described above except that the emitter element is made of a piezoelectric material, an anti-ferroelectric material, or an electrostrictive material. Files et al ('054) discloses an emitter element made of a piezoelectric material, an anti-ferroelectric material, or an electrostrictive material (abstract) in order to create a lighter emitting element (column 6 lines 25-32). Hence it would have been obvious at the time of the invention to one of ordinary skill in the art to combine the emitter element of Kano/Okamoto et al with the material of Files et al ('054) in order to produce a lighter emitting device.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elizabeth A. Rielley whose telephone number is 571-272-2117. The examiner can normally be reached on Monday - Friday 7:30 - 4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimeshkumar Patel can be reached on 571-272-2457. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Elizabeth Rielley

Examiner
Art Unit 2879

8/2/05
MARICELI SANTIAGO
PRIMARY EXAMINER